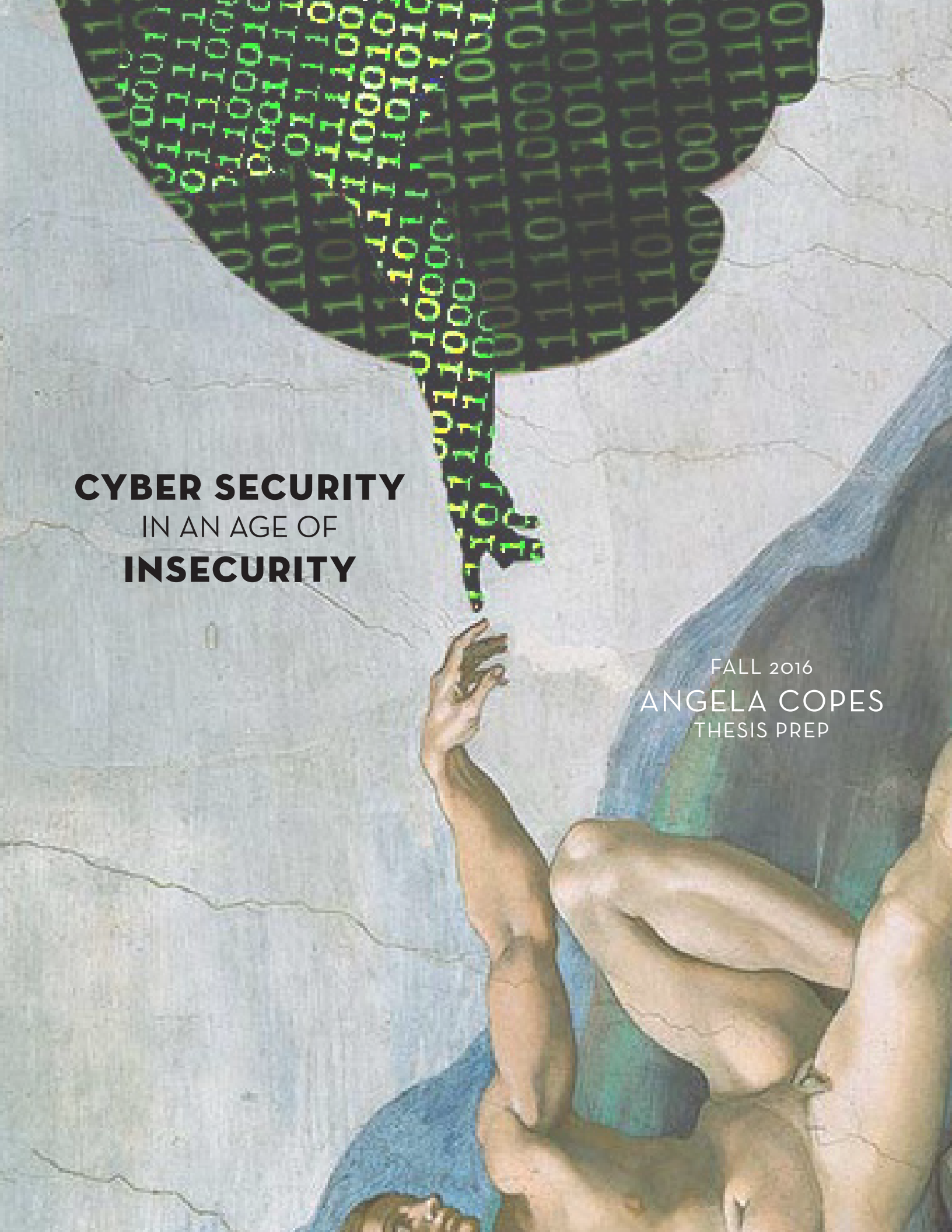
Fall 2016

Cyber Security in an Age of Insecurity

Angela Copes



CYBER SECURITY
IN AN AGE OF
INSECURITY

FALL 2016

ANGELA COPES
THESIS PREP

CYBER SECURITY
IN AN AGE OF
INSECURITY

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SYRACUSE UNIVERSITY
SCHOOL OF ARCHITECTURE
THESIS PREP FALL 2016
COMMITTEE: Nicole McIntosh,
Roger Hubeli, Sinead MacNamara

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THE CLAIM

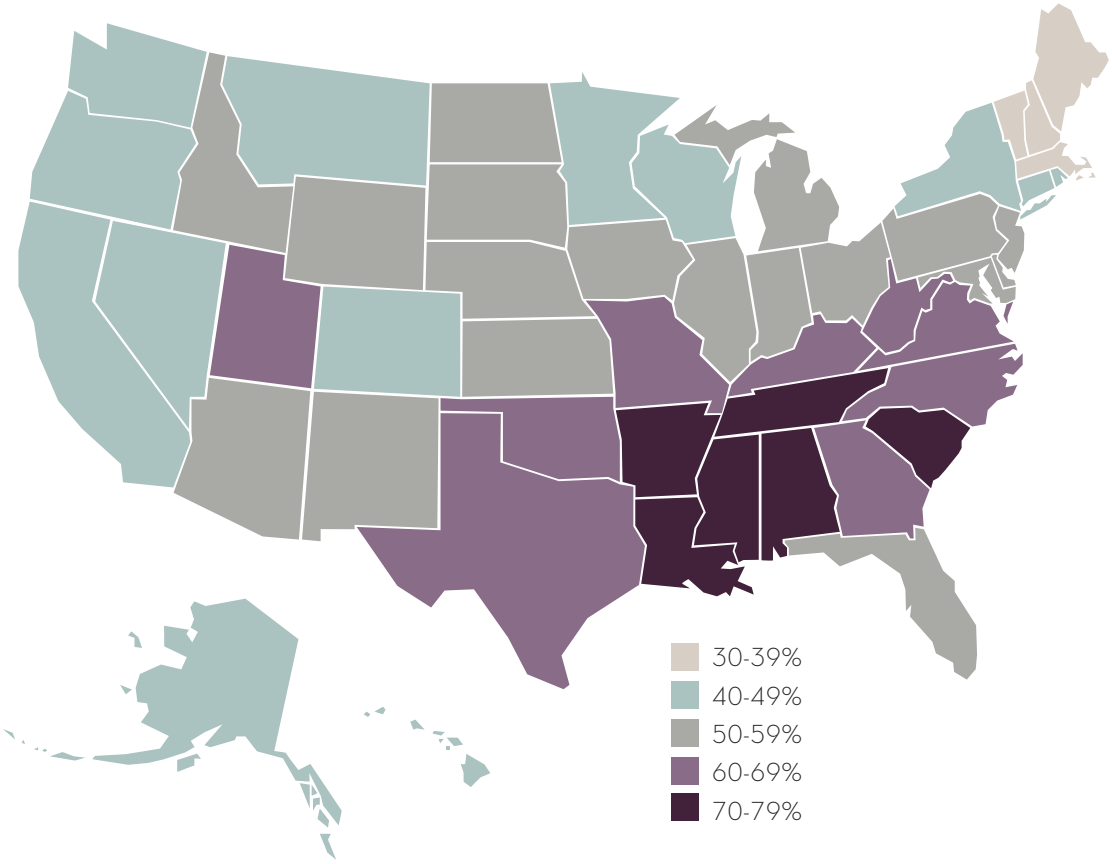
By combining the structure and space of Gothic Revival churches with the programmatic elements of a data center, two problems can be addressed. First, the churches avoid a fate of abandonment and obsolescence. As the Christain population declines and consolidates, these monuments are given a chance to maintian significance.

Second, through design, data centers can become a more integrated piece of the communities they serve. Instead of data centers being isolated warehouses in the middle of nowhere, people can have a better understanding of what allows their internet at home to connect them to the global network.

02

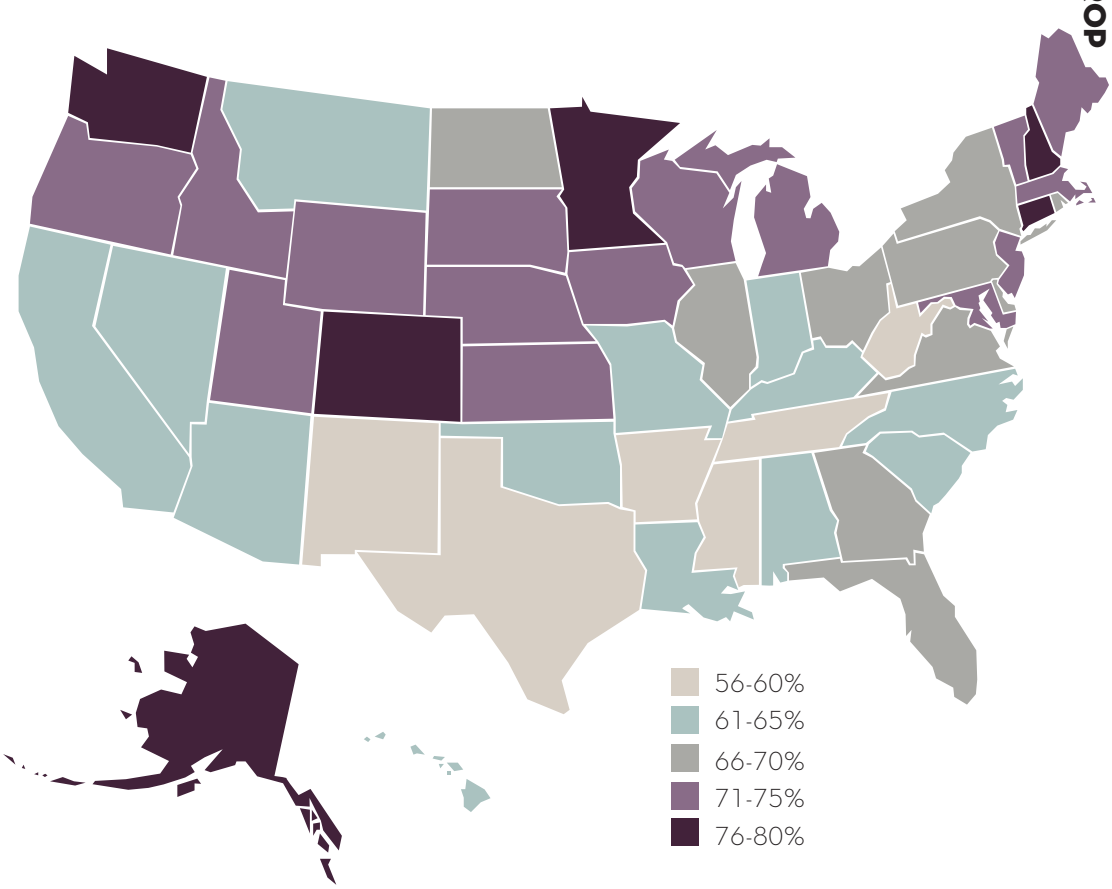
THE BACKDROP

Percentage of Adults Identifying as "Religious" (as of 2014 data)

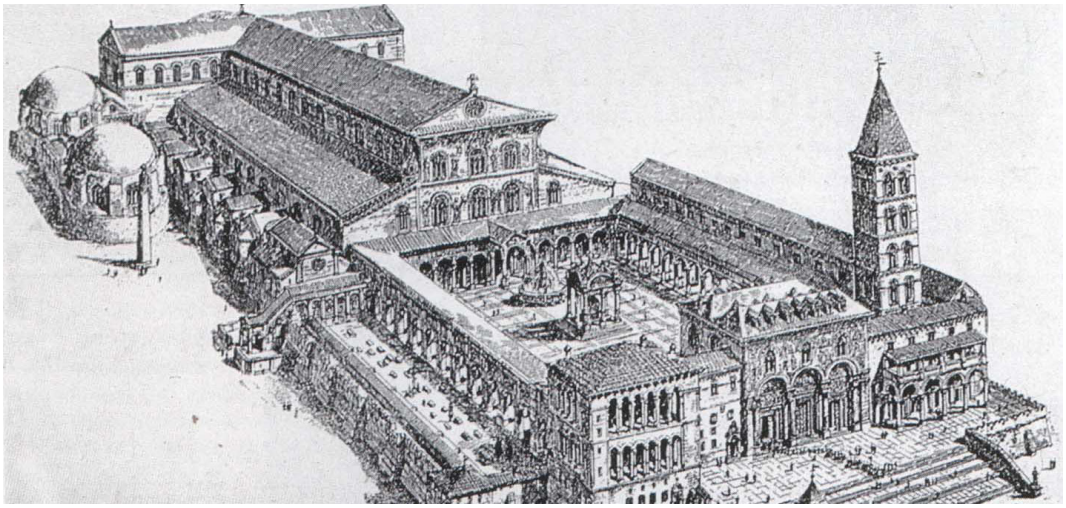


Christianity in America has been on a downward trend, especially in recent years. According to the Pew Research Center, from 2007-2014 the number of adults who identified as "religously unaffliated" increased by 6.7% moving to the second most popular religous group just after Evangelical Christians. Meanwhile Christain denominations across the board saw a decrease in population. This being said, America still has the highest Christian population of any country and the decline has regional implications, with the Northeast experiencing the largest declines. With a decrease in population comes a decrease in the need for church space and many dioceses have had to consolidate to save money for the upkeep of what churches they retain. The once proud places of gathering should not have to suffer a fate of abandonment or worse, destruction.

Percentage of Population with Internet Access (as of 2011 data)



The Millenial generation has brought with it an increase in internet usage and the massive cultural phenomena known as social media. While previously human interaction was the primary source of "social networking," the rapid increase in internet usage and advances in cellular technology have moved the idea of community into the virtual realm. The omnipresent internet is something that most people take for granted and trust will continue to function for them almost with a blind faith. In actuality all of this data is supported by an ever growing arsenal of computer servers housed inside data centers. According to Cisco's report on the Global Cloud Index in 2014, data center traffic is set to increase by 23% annually, trippling in volume between 2013 and 2018. This would mean a boom in data center construction, unless there is a localized solution.



[1] Old St. Peter's Basilica, reconstruction drawn by HW Brewer 1892

[2] St. Peter's Basilica today

The Christain church was for many, a social gathering place as well as a house of worship. Many strong memories are attached to these structures whether it be weddings, baptisms, funerals, or simply the meeting of a good friend in Sunday school. This communal nature was essential to the neighborhood and should be preserved even if people have started to move away from their faith in some situations. With this community gathering also came a sense of belonging and security. The Christian church has existed for over 2000 years -longer than many government or military regimes- and in a way stands as a cultural fortress.

[3] IBM data center Toronto 1963

[4] IBM Blue Gene supercomputers

The virtual communities of the internet on the other hand are exponentially expanding and are in need of more physical space to support all of their activity. Data centers as a typology are traditionally high security to protect their information and equipment but I believe this could change. Data centers at the start of their existence were actually quite opposite of what they are today. Companies were proud of their data centers and would have them on display in their offices (at a much smaller scale than the data centers of today) as transparent "glass boxes" showing off the technology.

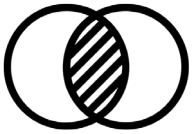
"And let us consider how to stir up one another to love and good works, not neglecting to meet together, as is the habit of some, but encouraging one another, and all the more as you see the Day drawing near."

Hebrews 10: 24-25

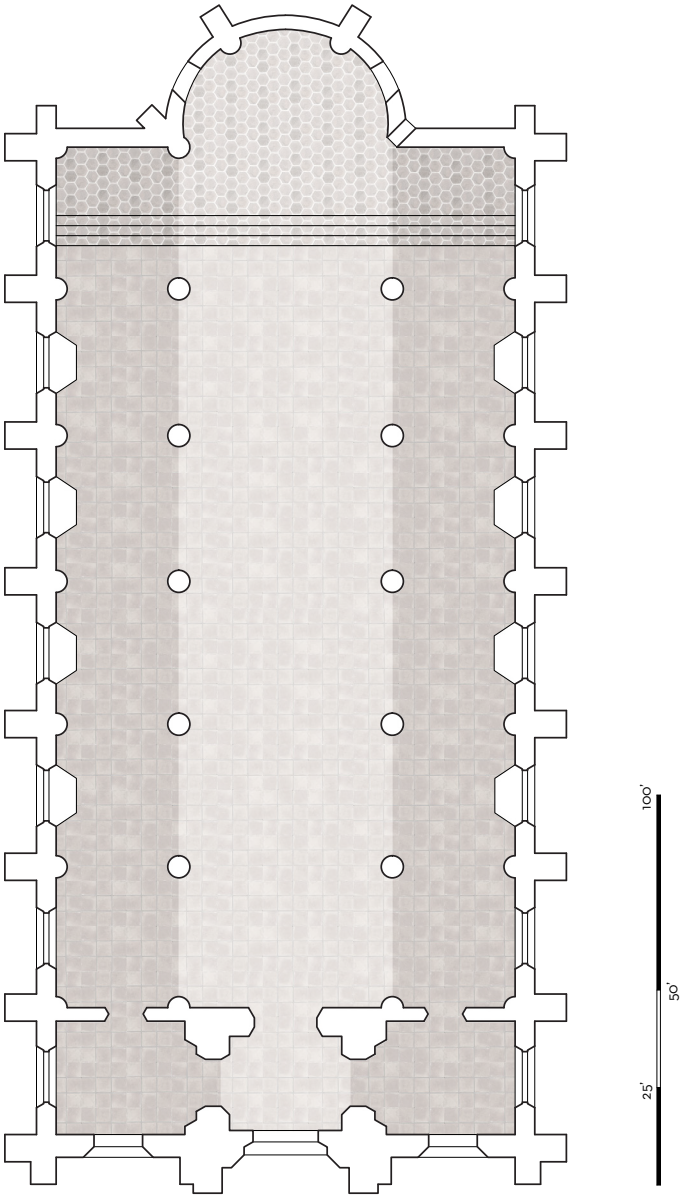
"[Cities] are transformed by the interface between electronic communication & physical interaction, by the combination of networks & places."

"Architecture in the Space of Flows"
Andrew Ballantyne & Chris L. Smith

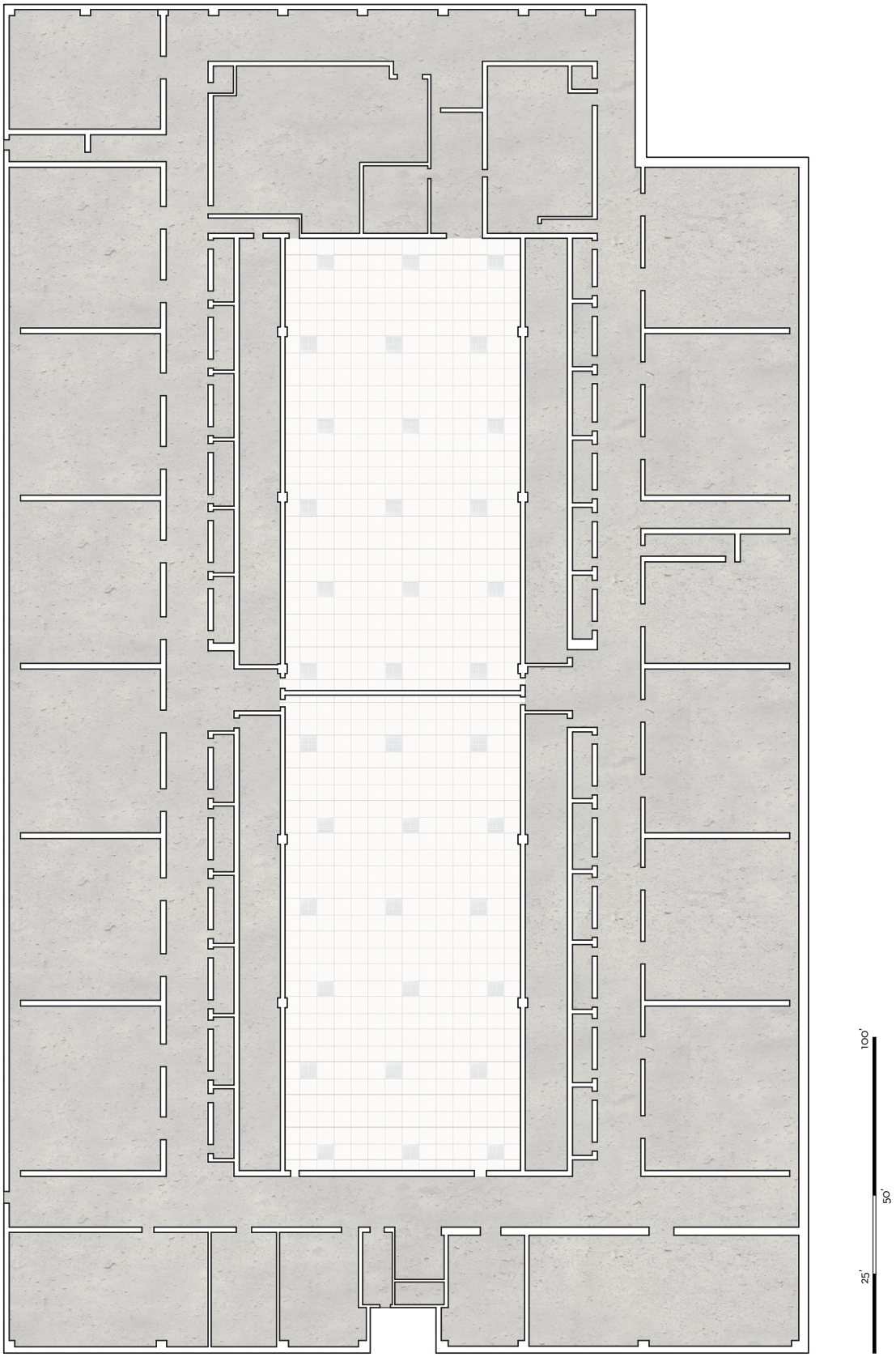
03



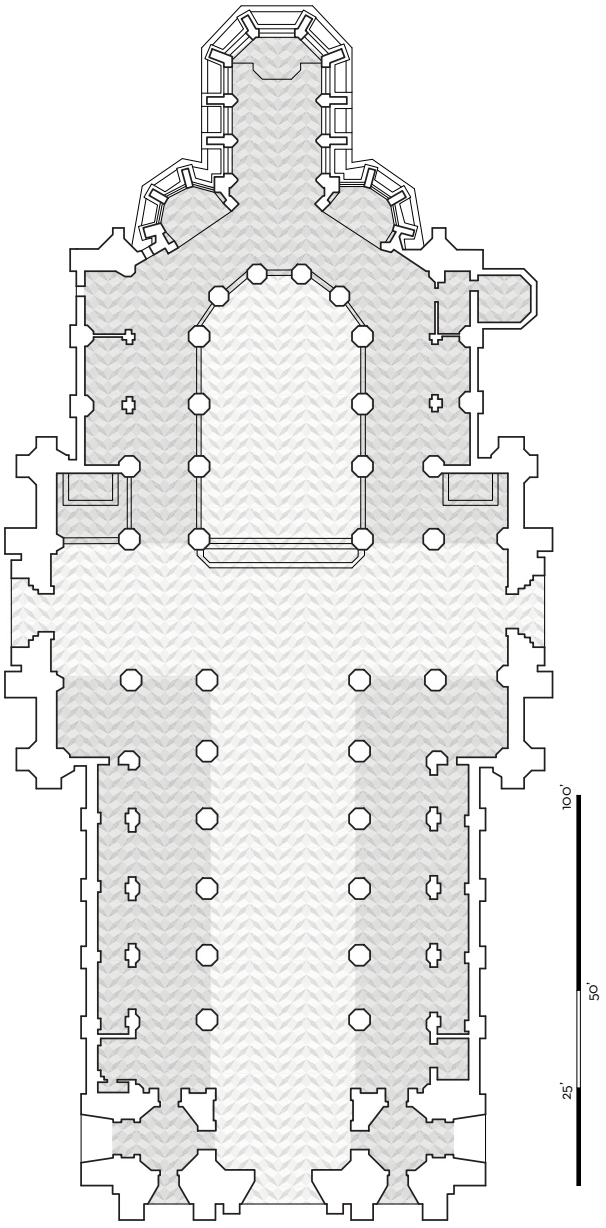
THE TYPOLOGIES



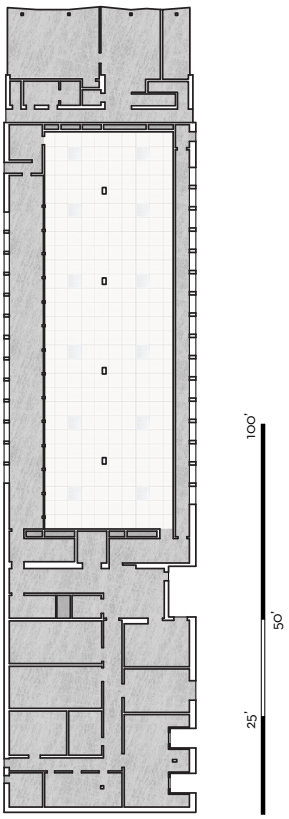
ST. ALPOHNSUS
Baltimore, MD
1842 Robert Cary Long Jr



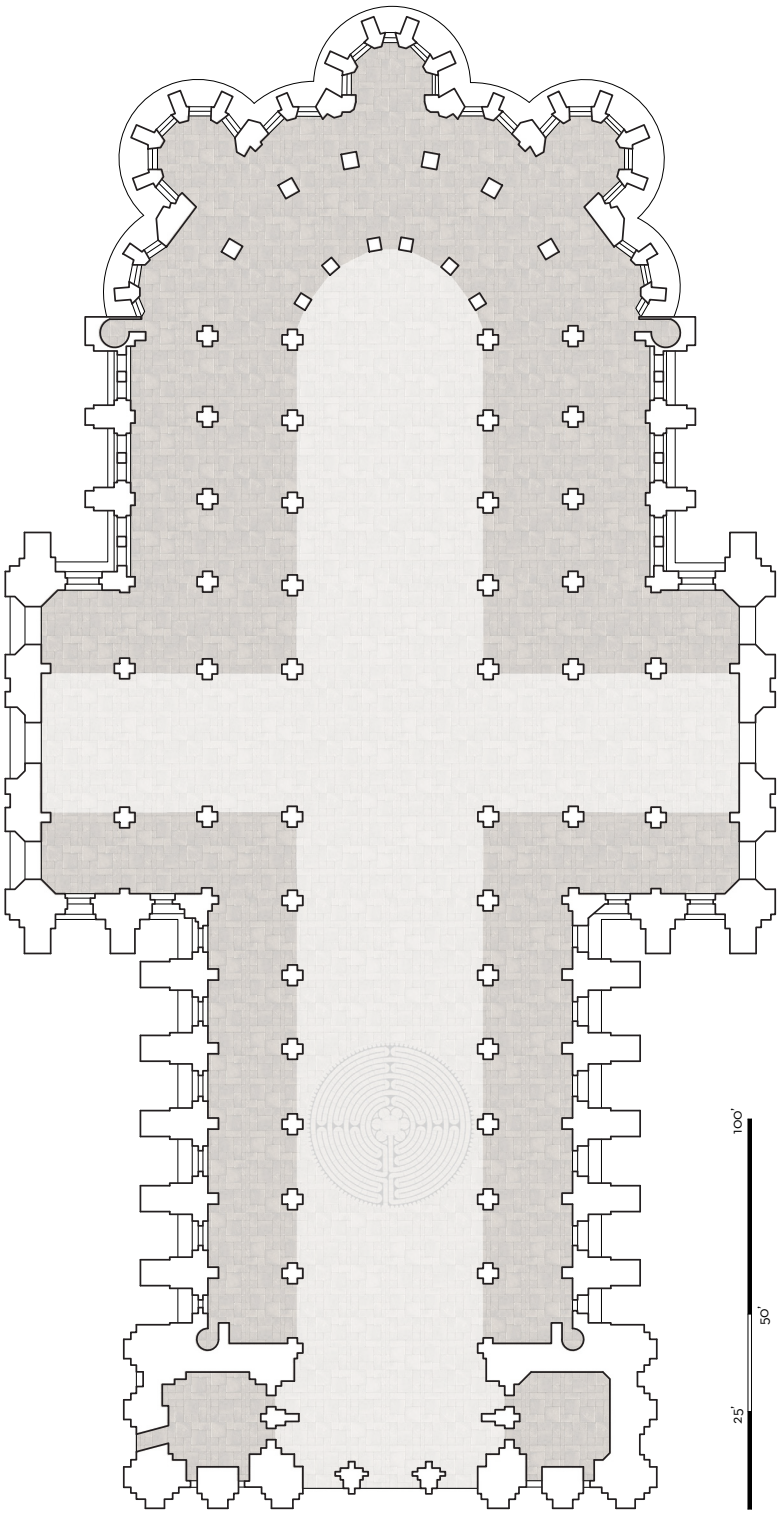
NSA DATA CENTER
Bluffdale, UT
Architecural Nexus



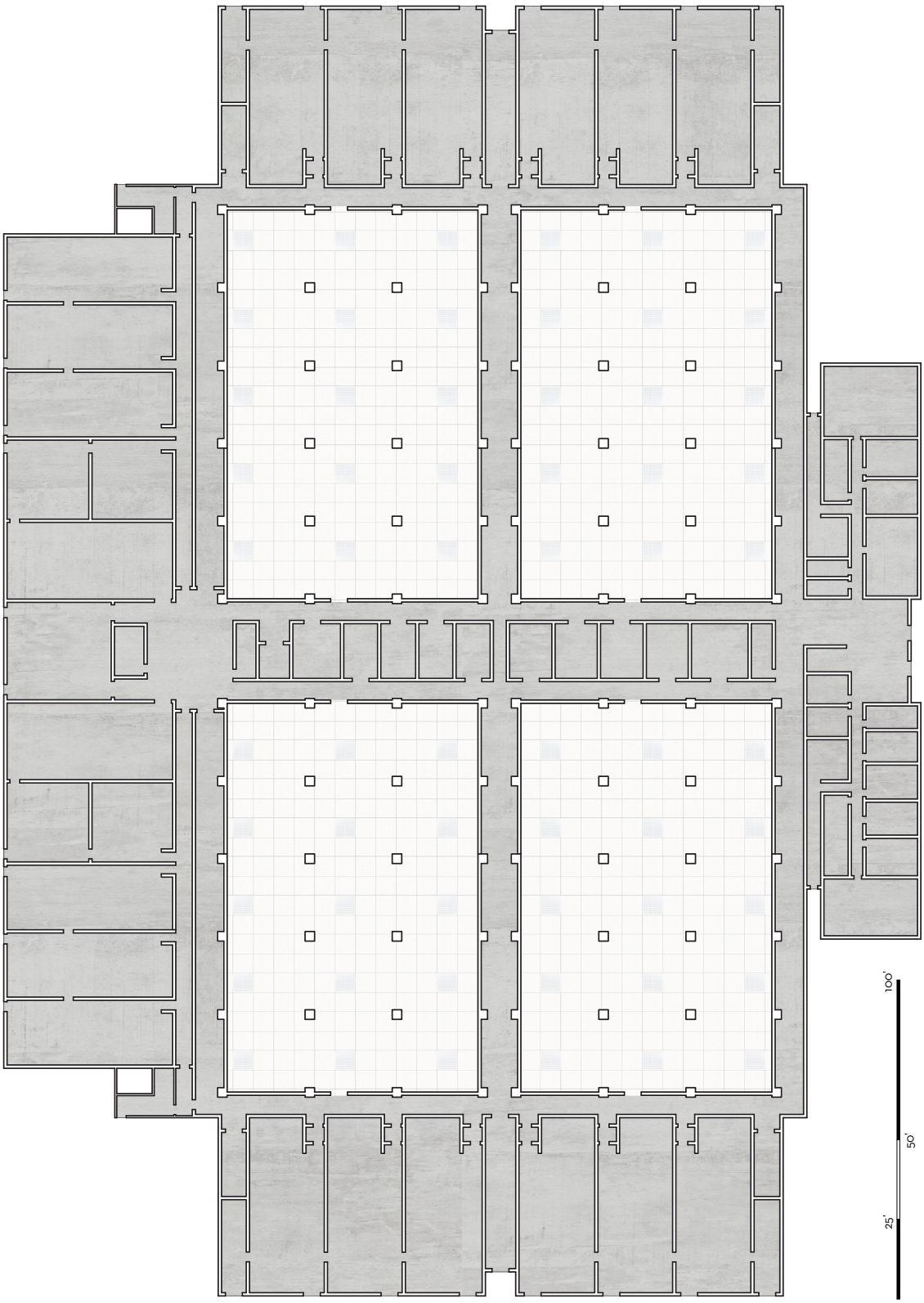
ST. PATRICK'S CATHEDRAL
New York City, NY
1878 James Renwick Jr



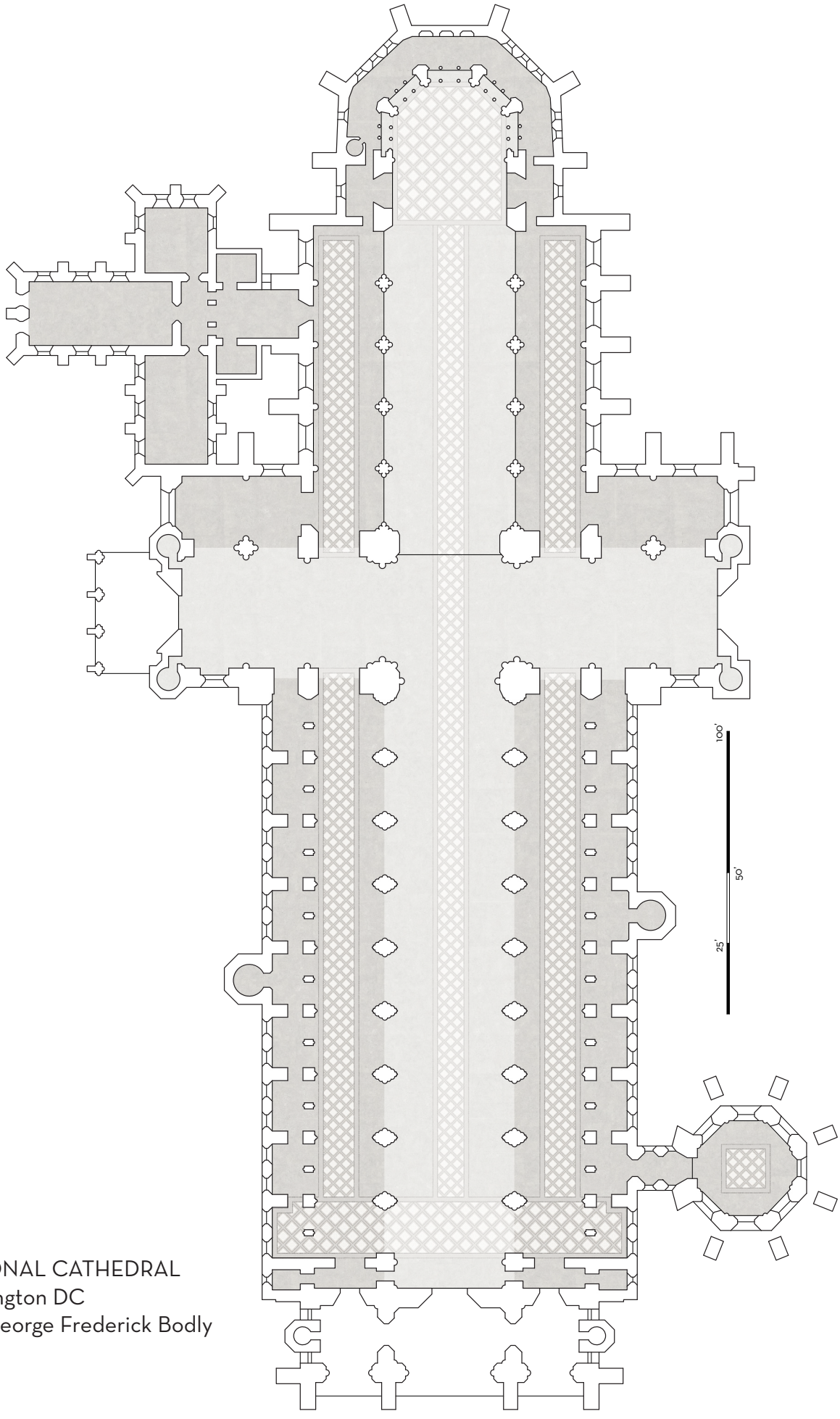
NOVARTIS DATA CENTER
Switzerland
OOS



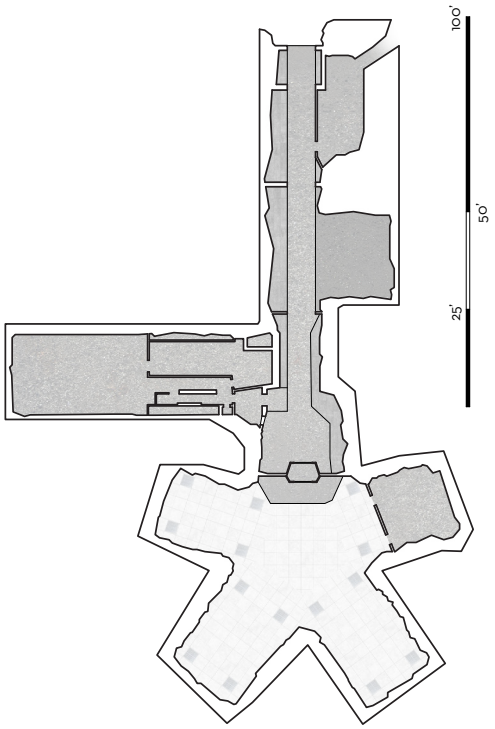
CHARTRES CATHEDRAL
Chartres, France
1220



GALILEO CONNECT DATA CENTER
Paris, France
Bouygues Construction



NATIONAL CATHEDRAL
Washington DC
1907 George Frederick Bodly



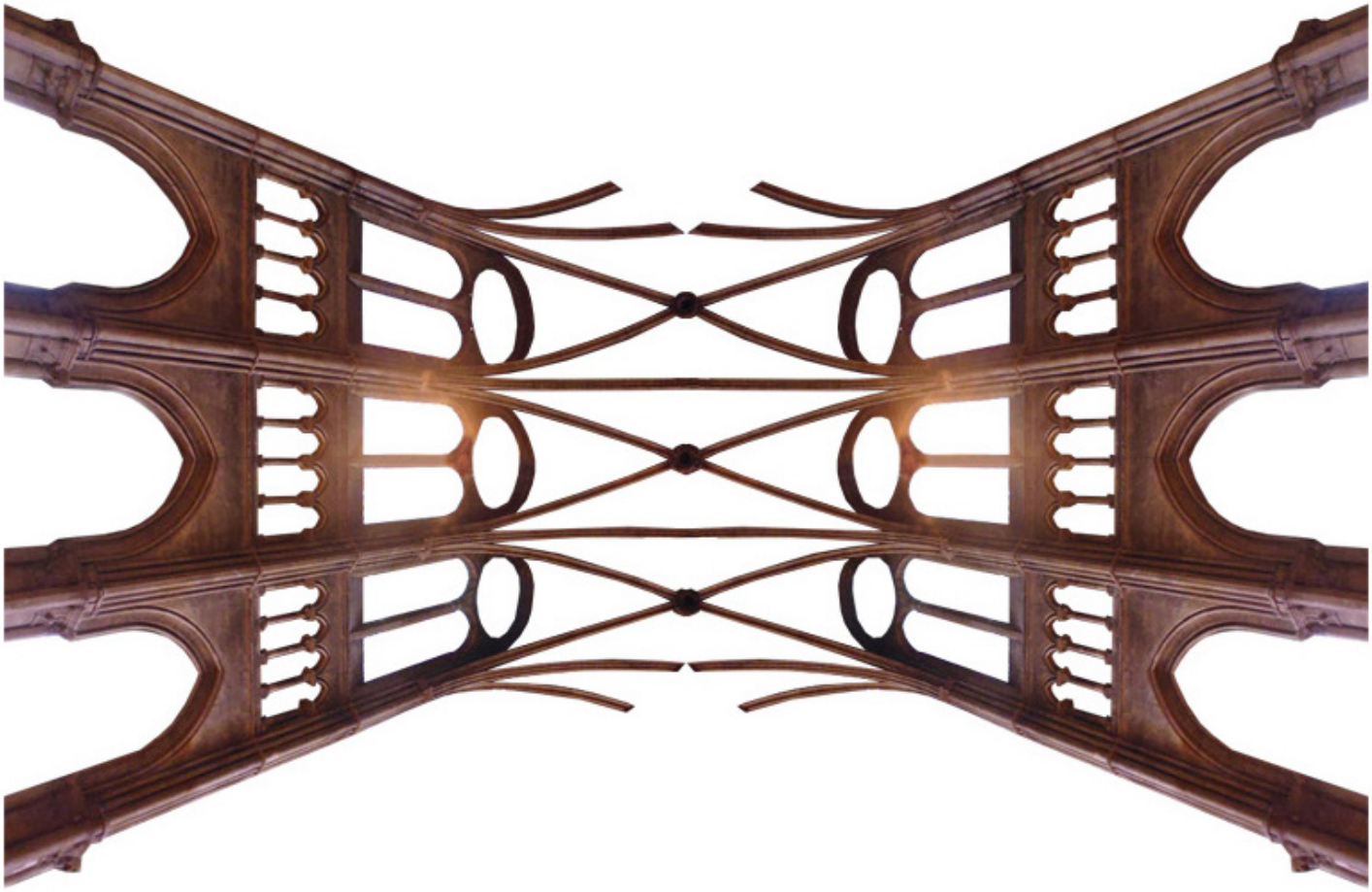
WHITE MOUNTAIN DATA CENTER
Stockholm, Sweden
Albert France-Lanord Architects

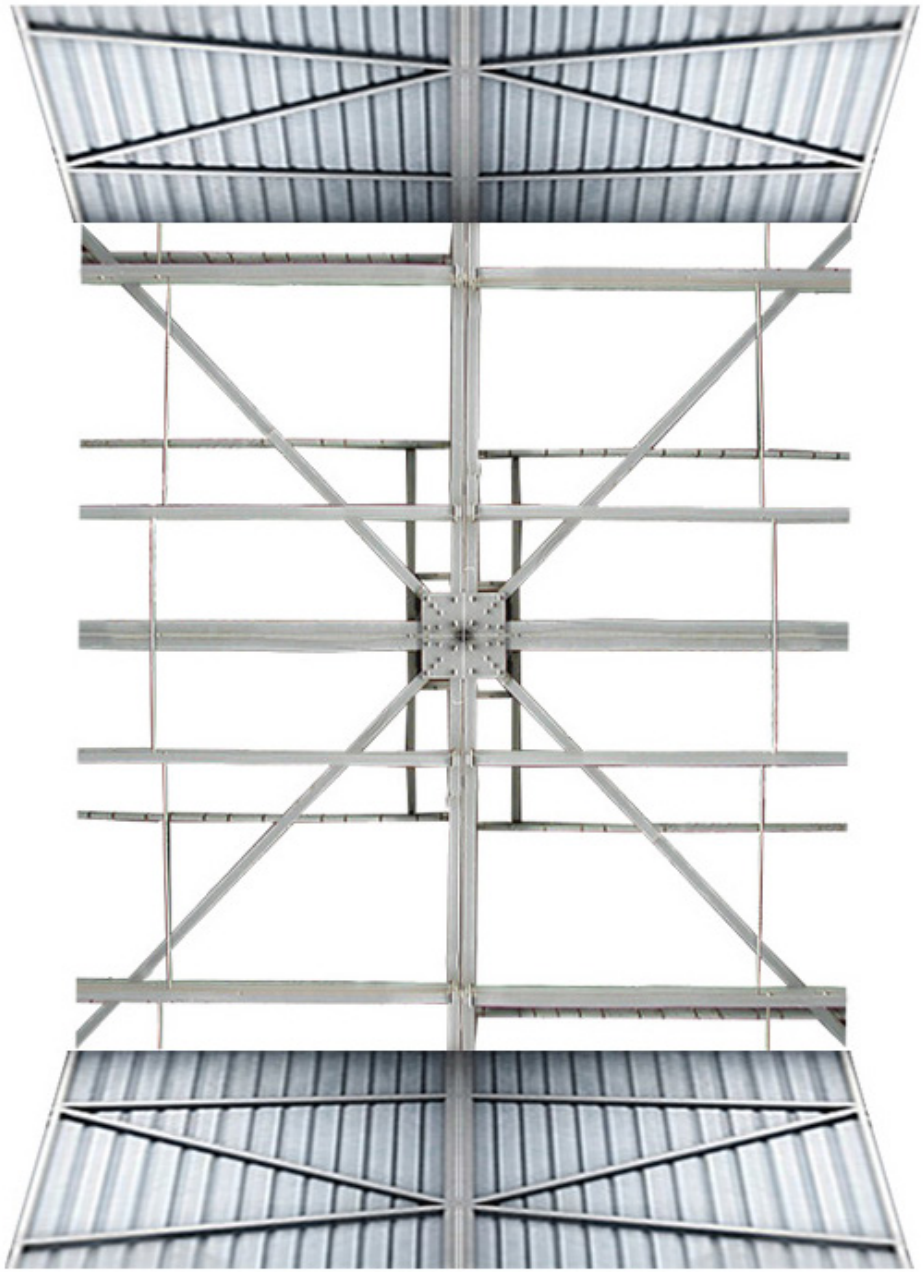
"The original sense of form, the layers of accrued implication deposited by time and human experience cannot be lightly brushed away...the carried meanings of these types may be used to provide a key to their newly invested meanings."

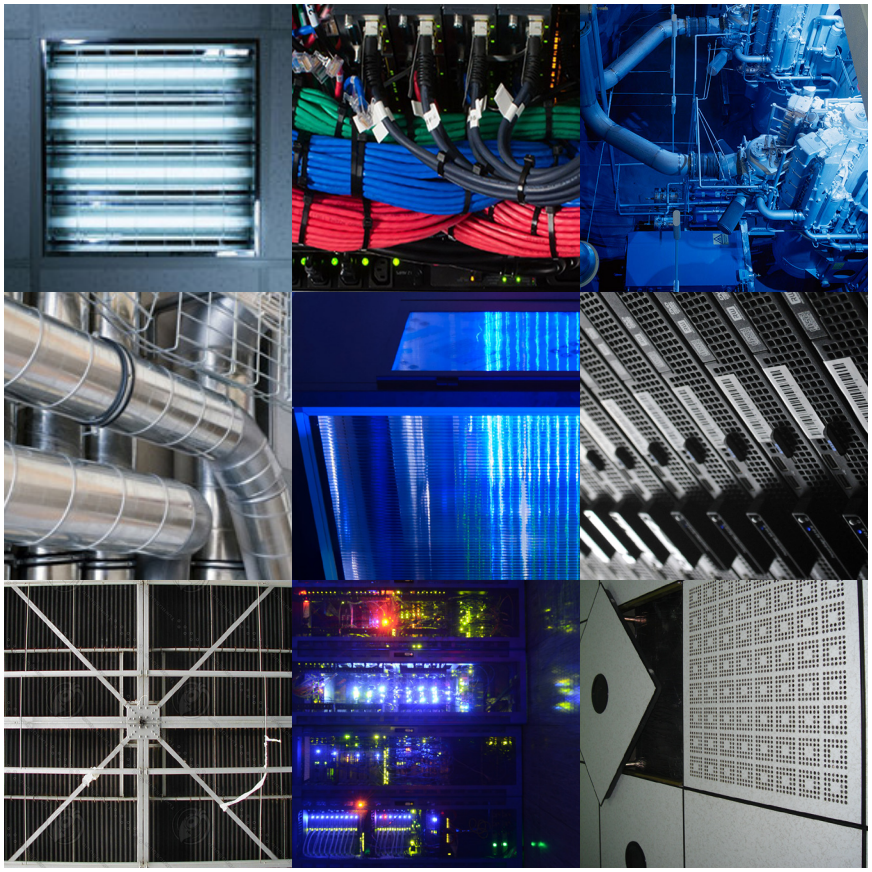
"The Third Typology"
Anthony Vidler in Opposition

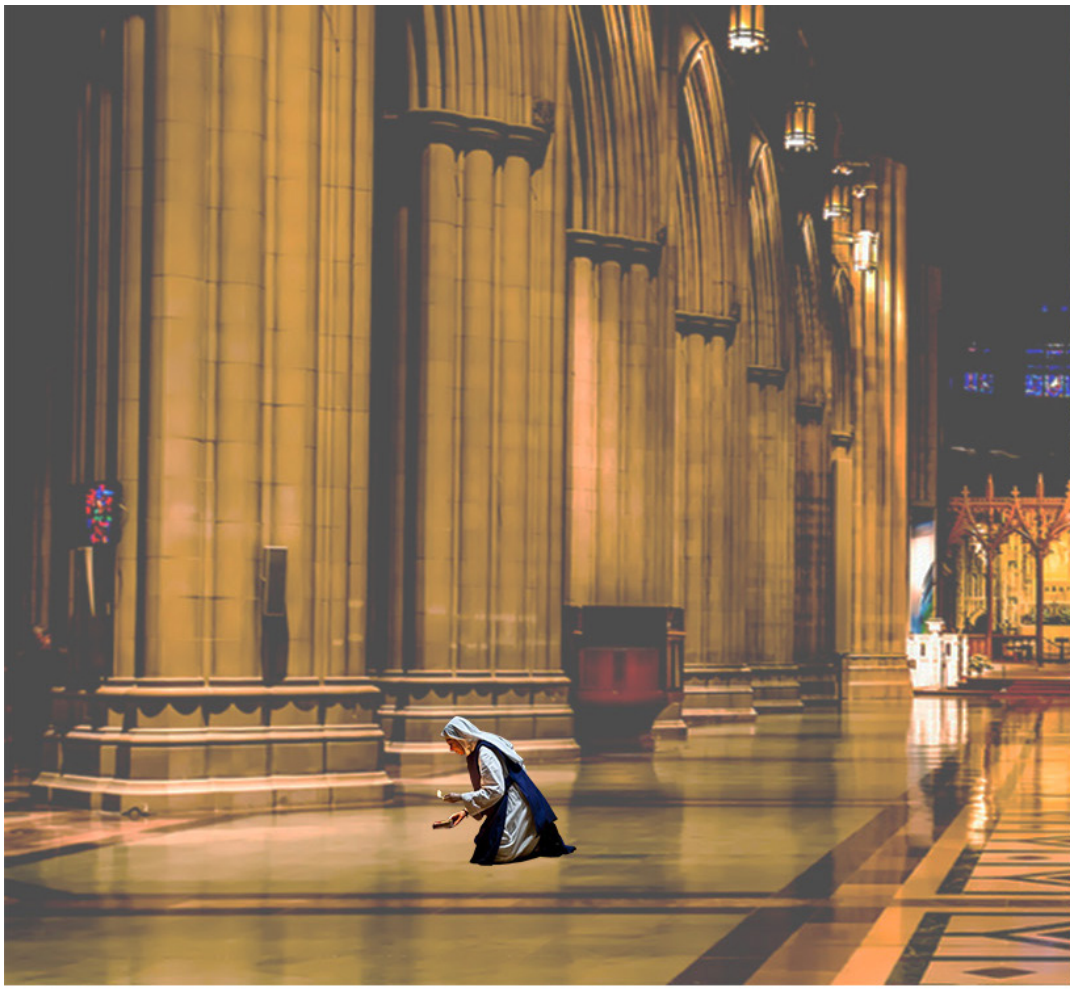
"Without design, the design that bridges the man to the machine, the Data Center remains an impenetrable fortress, seperating us from a technology that we use daily."

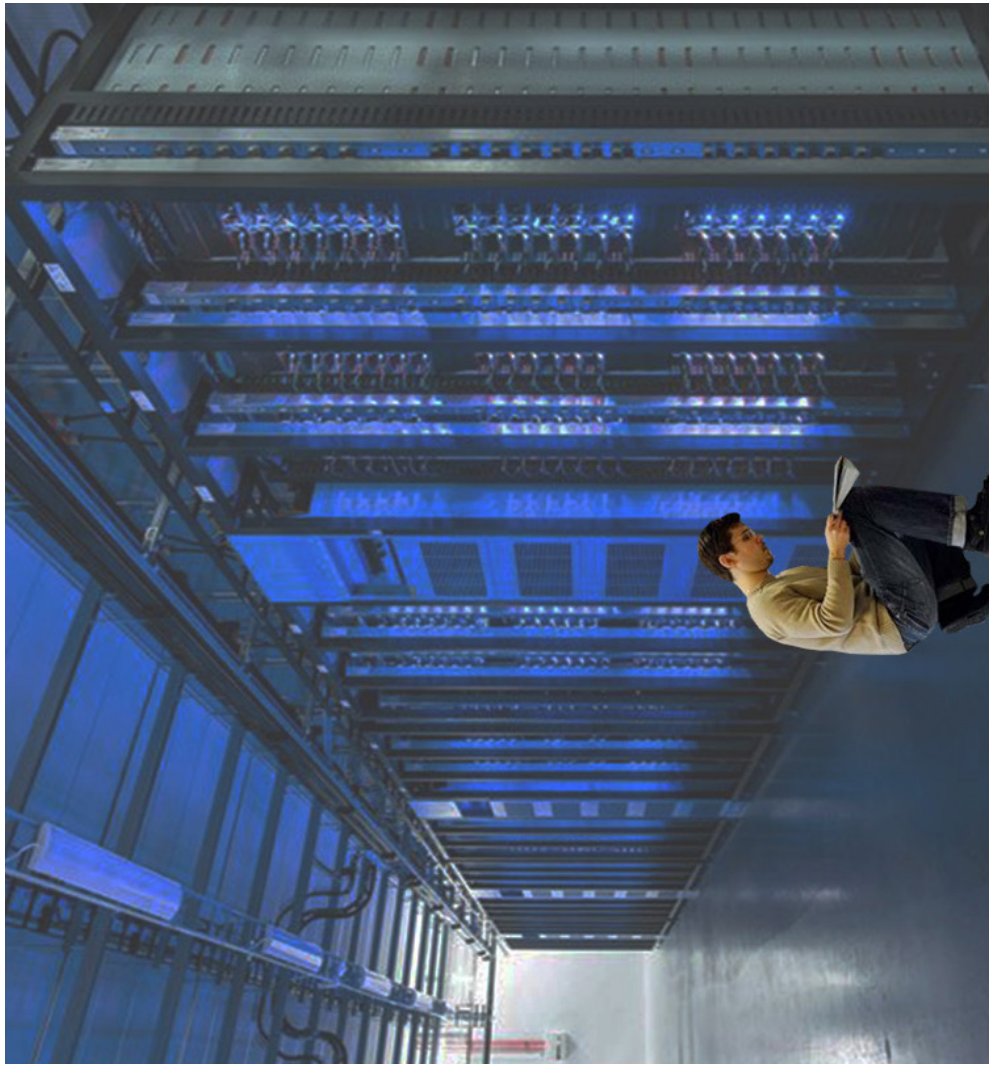
"Data Centers: Anti-Monuments of the Digital Age"
Vanessa Quirk

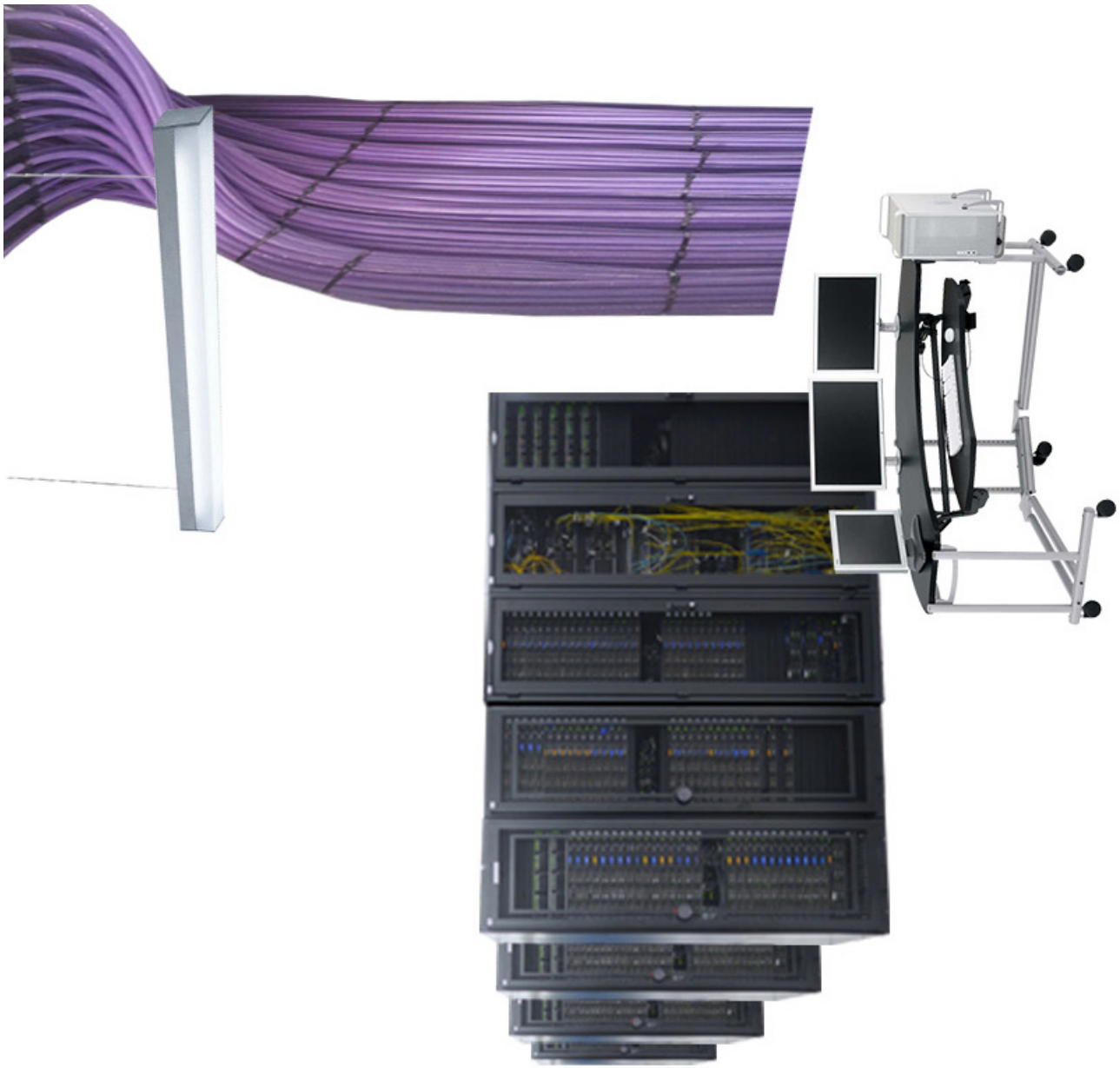












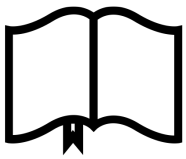
04

THE SITE

[5] 5th Avenue entrance of St. Patrick's Cathedral

This project aims to create a typology that can be implemented across many different sites. Each church would naturally have its own distinct characteristics but as long as it displays characteristics of the Gothic Revival structures it should be able to adapt to this new typology. For the study of this project I will choose one church in particular to create the initial design. The church I am looking at is the St. Patrick's Cathedral in New York City, NY. It is a Gothic Revival cathedral first opened in 1874 and designed by James Renwick Jr. The church is located in the Northeastern United States which has seen the greatest decline in Christianity. It is also located in the heart of Midtown Manhattan, a very busy area with a prospective user population at its disposal.

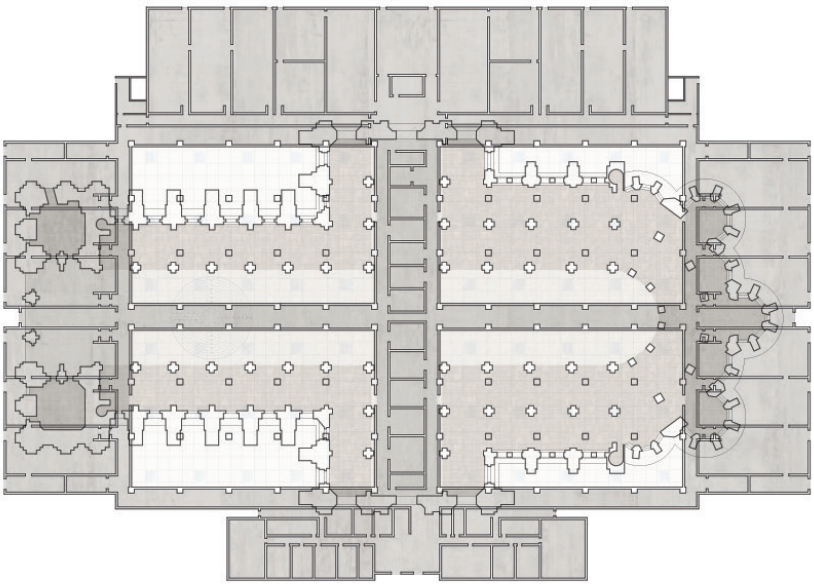
05

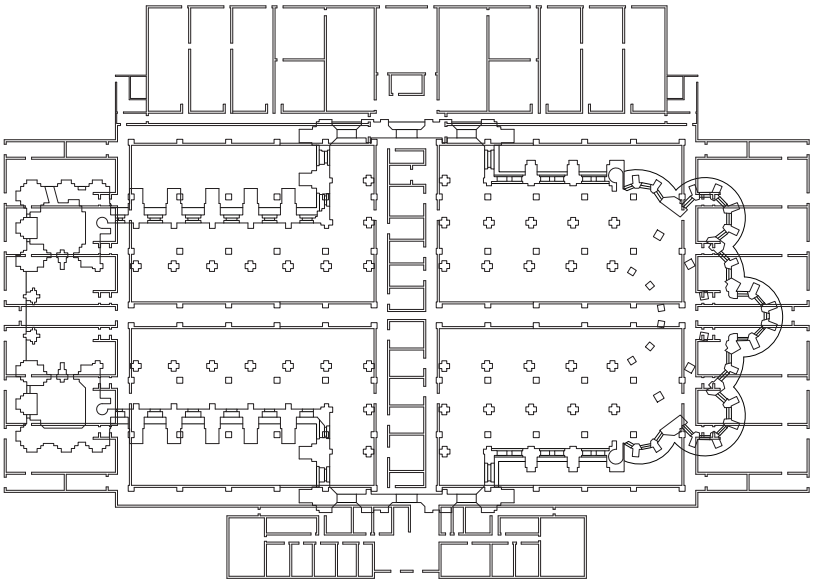


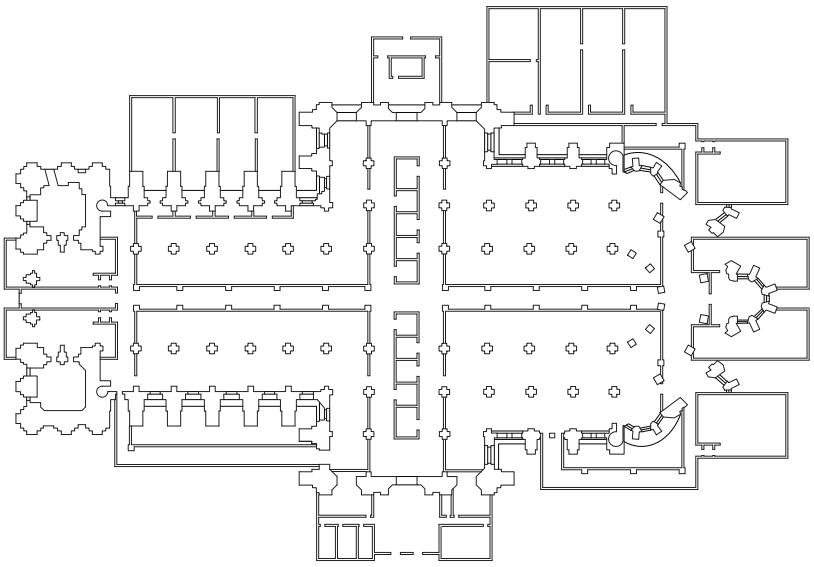
THE NARRATIVE

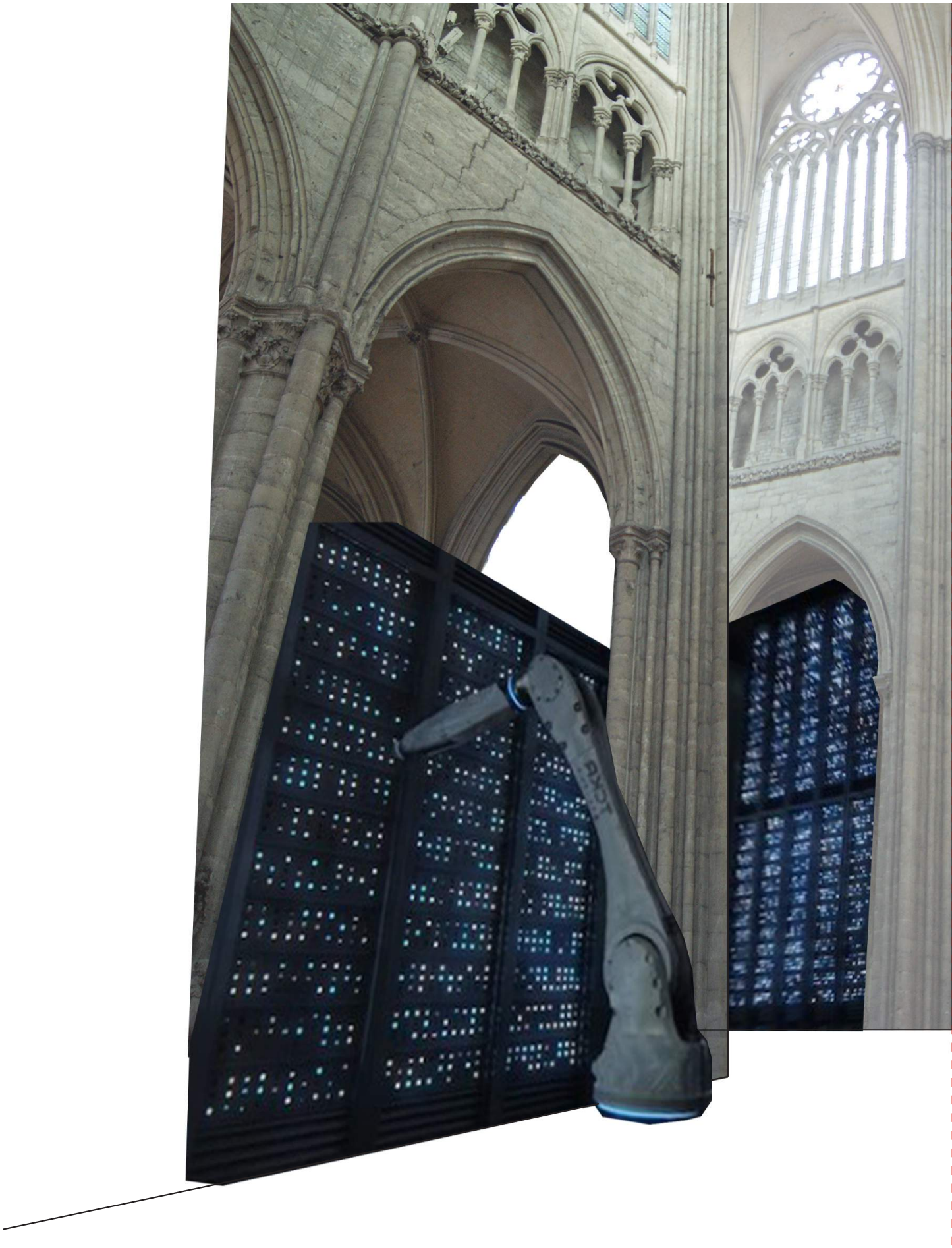
Nothing is secure out there.
Let us secure it for you.
Our cathedral of data is a time tested place to worship.
Worship freely, without threat of leaking and subsequent persecution.
There is a wealth of knowledge waiting to be grasped but you must do it carefully.
They are watching and waiting, pulling files and placing viruses as they like.
Your memories, your files are threats to be neutralized.
But here they are safe.
Here you are safe.

It was bound to happen eventually. The growth of data and technology through the age of information was exponential. More data meant more hiding places, and more hiding places meant more people seeking them out. It started out as isolated phenomena. A lone hacker would leak a picture here, plant a virus there. But that was before children grew up with smartphones constantly at their side. Swiftly and silently, organizations of "information vigilantes" began to dig deeper into the web of digital files being stored in the growing network of behemoth data centers. Their pointed attacks increased in scope to an all-out war. Privacy was not an option for those citizens with governing power. Transparency was owed to the constituents. But, as with any attack on domestic soil, a cyber-attack was to be met with an iron fist. The origin of the attacks, be they foreign or domestic, were unknown and in this all suffered. While the shutters of government information were pulled tight, the doors of citizens' personal data were kicked down. It was uncertain who would enter your storage, suspicious and controlling government power or malicious and prying hacker group, but either one meant a grave loss. Analog communications had been all but decimated after digital technology had been used for decades and many citizens felt a desperation to preserve whatever digital files they had left. As it often does in times of uncertainty, society turned to the church. This time it was not for the worship of old deities but for the protection of new ones. With an invocation of the separation of church and state, the church became a stronghold and a haven for those wishing to keep their data from the prying hands of the warring powers on the exterior. Community members could safely deposit and withdraw their data within the confines of firewalls and the most advanced security systems available, like having a digital guardian angel over their memories. So far this matching of space and need has helped preserve the scrambled bits of people's confidence in the digital realm as well as the community icons that are the churches of past eras, but the future, as always, is uncertain.









06

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Figures

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